



**Figure 3.15 – Epoxy Coating of the Cubes**

### **3.5 Exposure Environments**

As stated earlier, three different environments were used in this research project; two to introduce an accelerated corrosion process, and the third as a control environment. The next section explains these different environments in detail.

#### **3.5.1 Submersion Baths**

Four watertight submersion baths were fabricated using timber, plywood, rubber pond liner, fiberglass insulation, and insulating foam. Each bath was designed to hold six slabs with seven specimens each, for a total of 42 specimens per bath. The baths were approximately 10 feet long by 4.5 feet wide and 1 foot deep. The experiment called for one week of submersion in 15% salt-water solution at 130°F-sustained temperature followed by one week of dry heat at the same temperature to further accelerate the corrosion. To achieve these temperature requirements, a water heater, thermostat, and circulating pump were installed in each bath for use during the submerged cycles. An industrial space heater was used for the dry cycles. Cubes were placed in one of the baths along with the slabs, five for each specimen for a total of 210 cubes. Once the slabs were loaded into the baths, water and salt was added to reach a 15% solution in two of the baths. The other two baths were exposed to dry heat. At the end of each week of exposure, the water was pumped from the wet baths to the dry baths, and the dry heat was introduced to the once-wet baths. Half of the specimens in the baths were removed at the end of six months. The duplicate set of specimens was removed at the end of the one-year exposure period. Figures 3.15 and 3.16 show the baths in wet and dry cycles.